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U.S. Nuclear Regulatory Commission
Mail Station P1-137
Washington, D.C. 20555

Attention: Document Control Desk

Subject: Grand Gulf Nuclear Station
Unit 1
Docket No. 50-416
License No. NPF-29
Response to the Open Items Identified in the Safety Evaluation on GGNS's Compliance with the Station Blackout Rule

GNRO-92/00032

Gentlemen:

By letter dated February 6, 1992 (GNRI-92/00024), NRC provided the Safety Evaluation on GGNS's compliance with the Station Blackout (SBO) Rule (10CFR50.63). This Safety Evaluation identified additional information that would be required for NRC to complete its assessment of GGNS's conformance to the SBO Rule.

The requested information is attached for your use. Please contact Mike Brandon (601-437-6488) should you have any questions or desire additional information.

Yours truly,

C. R. Hutchinson for

WTC/MKB/mtc
attachment: Response to the Open Items Identified in the Safety Evaluation on GGNS's Compliance with the Station Blackout Rule
cc: (See Next Page)

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RESPONSE TO THE OPEN ITEMS IDENTIFIED IN THE SAFETY EVALUATION ON GGNS's COMPLIANCE WITH THE STATION BLACKOUT RULE

NRC's Safety Evaluation on GGNS's compliance with the Station Blackout Rule contained six staff recommendations for additional information/ actions. Each of these six items are addressed below:

Recommendation 1

The licensee needs to ensure and confirm to the NRC that the stripping of the reactor core isolation cooling (RCIC) gland seal compressor will not adversely affect RCIC operation. The battery calculations should be included with the other documentation that is to be retained by the licensee in support of the SBO submittals.

Response to Recommendation 1

Operation of the Reactor Core Isolation Cooling (RCIC) Turbine is acceptable without the RCIC gland seal compressor based upon General Electric Specification 21A9526. Section 4.2.2.2.4 of the specification states that the gland containment equipment is not essential for any one single operation of the RCIC turbine. The specification also exempts the gland containment equipment from use during abnormal ambient conditions. Therefore, the stripping of the RCIC gland seal compressor during SBO conditions will not adversely affect RCIC operation. Appropriate battery calculations are available for NRC review.

Recommendation 2

The licensee should a) re-perform its control room and upper cable spreading room heat-up analysis taking into account the non-conservatism as identified in the SAIC TER and verify the prior conclusion that these room temperatures would not exceed 120 degrees F, and b) revise the plant procedures to require the operators to open the instrument and control cabinet doors within 30 minutes following an SBO event per the guidance described in NUMARC 87-00.

Response to Recommendation 2a

As recommended, we will re-perform the Control Room and Upper Cable Spreading Room heat-up analysis. This re-analysis will be completed by the end of September 1992.

Based on a qualitative assessment of potential non-conservatisms identified by your Technical Reviewer, we believe that the new analysis will demonstrate that these areas are not Dominant Areas of Concern as defined in NUMARC 87-00.

RESPONSE TO THE OPEN ITEMS IDENTIFIED IN THE SAFETY EVALUATION ON GGNS's COMPLIANCE WITH THE STATION BLACKOUT RULE (Continued)

Response to Recommendation 2b

Consistent with the existing commitment (GGNS letter to NRC dated April 14, 1989, (AECM-89/0074)) the Off-Normal Event Procedure for Station Blackout will be revised to open Control Room panel doors of cabinets containing Instrument & Control equipment as soon as possible. In this context, as soon as possible means right after the more critical steps are taken to restore offsite power, manually start the EDGs from the Control Room, verify the scram, verify primary system parameters, etc. This procedure will ensure that the doors are opened within 30 minutes after completion of the above critical actions. This will be accomplished by inserting this procedural step near the beginning of the "Subsequent Operator Actions" section which follows the "Immediate Operator Actions" section in the procedure. This is consistent with the guidance of NUMARC 87-00, specifically Question and Answer #65 of Appendix I in NUMARC 87-00.

Recommendation 3

The licensee should a) provide the initial room temperature used in the heat-up analysis and b) provide in detail and justify the heat loads used in the analysis. It is the Staff's position that the licensee can assume any initial room temperature provided it has an administrative procedure to ensure that the room temperature will not exceed the assumed initial room temperature during normal power operation.

Response to Recommendation 3a

The heat-up calculations do not consider initial room temperature. The evaluation of the switchgear/inverter room heatup following an SBO is based upon a design basis calculation for LOP/LOCA conditions. The temperatures are calculated for steady-state conditions without active cooling or forced ventilation of these areas. The steady-state temperature is based only on the heat input into the room due to internal electrical heat loads and from the surrounding areas assuming 95°F outside air temperature and accident conditions for adjacent rooms.

RESPONSE TO THE OPEN ITEMS IDENTIFIED IN THE SAFETY EVALUATION ON GGNS's COMPLIANCE WITH THE STATION BLACKOUT RULE (Continued)

Response to Recommendation 3b

The evaluation of heatup in these rooms included all of the heat loads for SBO conditions plus additional electrical heat loads for LOCA conditions. These additional heat loads are the electrical loads energized during LOCA conditions which includes switchgear, load centers, motor control centers and controls to support equipment required to operate. The LOCA heat loads due to mechanical equipment were excluded in the SBO heat-up evaluation. The only equipment which would be generating heat during station blackout would be DC distribution equipment which is included in the evaluation.

Recommendation 4

The licensee should reevaluate the drywell heat-up calculation assuming a heat load which will also include the heat load due to the recirculation pump seal leakage of 36 gpm, and confirm that peak temperature does not exceed 330 degrees F.

Response to Recommendation 4

The current drywell heat-up calculation model does not have the capability to account for the incremental heat load addition due to an assumed recirculation pump seal leakage of 36 gpm. GGNS will perform a new drywell heat-up calculation considering Generic Issue 23, Reactor Coolant Pump Seal Leakage by the end of September 1992. In the interim, the existing calculation for a Main Steamline break, as discussed below, provides reasonable assurance that the maximum drywell temperature for the SBO event will be enveloped by the existing worst-case design basis temperature.

Based on the existing design basis analysis for a Main Steamline Break event, neglecting drywell heat additions, the estimated heat load required to reach the drywell design temperature of 330°F is approximately 13,660 MW. For a Station Blackout, the estimated heat load sent to the drywell is approximately 6 MW. This heat load is due to 30 gpm leakage based on the maximum allowed Technical Specification limit, 36 gpm of Recirculation Pump Seal leakage and other heat transferred from the reactor vessel to the drywell for the four hour duration of the SBO event.

RESPONSE TO THE OPEN ITEMS IDENTIFIED IN THE
SAFETY EVALUATION ON GGNS's COMPLIANCE WITH
THE STATION BLACKOUT RULE (Continued)

The Main Steamline break maximum temperature of 330°F occurs at 1.09 seconds after the break. The drywell heat sinks have not had time to respond, the ECC systems are not getting started and will not have reached full flow condition the reactor vessel, and the drywell cooling system is isolated not working. The only drywell heat dissipation occurring this time is the Suppression Pool pressure suppression function and bypass leakage flow from the drywell to the containment. During a Station Blackout, both of these passive drywell features will function as a part of the structure. Therefore, if the drywell is able to limit a heat load of 13,660 MW to 330°F during a Main Steamline Break, then a heat load of approximately 6 MW would be bounded under similar conditions.

Recommendation 5

It is the Staff's position that an emergency diesel generator (EDG) reliability program should be developed in accordance with the guidance of Regulatory Guide (RG) 1.155, Section 1.2. Confirmation that such a program is in place or will be implemented should be included in the documentation that is to be maintained by the licensee in support of the SBO submittals.

Response to Recommendation 5

An Emergency Diesel Generator Reliability Program that satisfies the SBO requirements will be implemented by December 31, 1992.